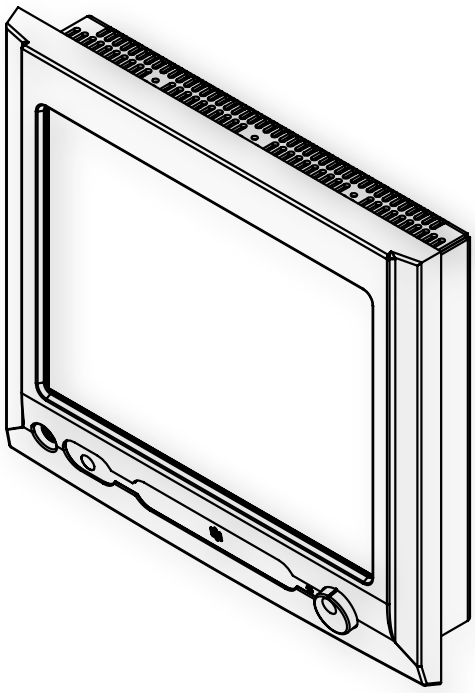
User Manual

HATTELAND® DISPLAY



JH 12T01 MMC - Maritime Multi Computer

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www.hatteland.com

User Manual JH 12T01 MMC	
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For models: -A4	Slim User Manual

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Aamsosen
N-5578 Nedre Vats, Norway

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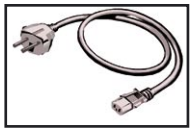
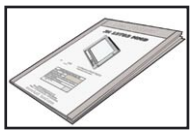
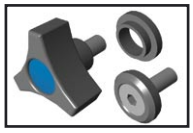
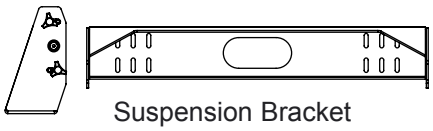
Contents of package

This product is shipped with:

Item	Description	Illustration
	1 pcs of Windows Operating System CD(s) or alternative operating system(s).	
	Driver software CD(s) for factory installed components like mainboard, IDE, network etc. For more information see the Installation Recommendations chapter.	
	1 pcs of Standard Power Cable. (European or US standard) - Length approx: 1.9m *Note: Power cable not included in the DC version.*	
	1 pcs of User Manual (Slim version) **Note**: The separate documentation for third party components are available on attached CD. The printed manual only covers specific information for Hatteland products, and not third party components.	
	1 pcs of configuration, test report and checklist sheets.	

Optional accessories for Panel Computers:

Item	Description	Illustration
	Bracket mounting kit: (Delivered only with optional bracket) 4 pcs of RenCol Tristar Knob Male - M6X10 mm 4 pcs of MicroPlastic - 6 mm Nylon washer. 4 pcs of Bolt with shoulder washer - M6X1X20 4 pcs of Flat washer	 Suspension Bracket

General

HATTELAND® DISPLAY

KNOWLEDGE - QUALITY - ECONOMY

Introduction to Jakob Hatteland Display AS

Founded in 1987, Jakob Hatteland Display (JHD), based in Norway, offers the widest range of type approved marine monitors, panel computers and type approved marine computers for the worldwide commercial, naval, yacht and cruise market.

Today the group develops and manufactures a complete range of IEC 60945 tested marine monitors, panel computers and IEC 60945 tested marine computers.

Approved Marine Displays (MMD/STD)

Hatteland Display's marine monitors are based on high quality and state-of-the-art components with the highest specifications, and meet all requirements for harsh maritime use. The displays are easily integrated into your system, due to standardized products and features.

The MMD (Maritime Multi Display) series consists of sizes ranging from 10in to 23in.

Specifically designed for navigation and automation systems on ships, these certified LCD monitors comply to IP66 described in IEC 60925, are tested according to IEC 60945 and are approved by major classification societies such as ABS, BV, ClassNK, DNV, GL and LR. Further to this marine standard, the 19in MMD, the 20in MMD and the 23in MMD marine monitors are also available as ECDIS and ARPA radar-compliant units.

Approved Marine Panel Computers (MMC)

The combination of the reliable design of the marine TFT-LCD modules, together with industrial computer boards, allows Hatteland Display to offer a product range for customer applications where space is critical and full function is desired in a single unit. In particular, the standardized ETX-board form factor allows full flexibility when it comes to processor choice. Because of multiple useful standard components we can offer a highly attractive commercial package

The MMC (Maritime Multi Computer) series consist of sizes ranging from 10in to 23in.

These products have also been designed for typical marine applications in navigation, automation and other systems. Following Hatteland's philosophy, these marine panel computers are fully tested according to IEC 60945 and are designed for type approval.

Approved stand-alone and rack-mounted marine computers

Two concepts are followed to offer variation in size, function and expansion slots for customers: approved black-box computers for limited space and approved computers for standard 19in racks, which offer a high degree of expansion. Configurations according to customer wishes are implicit, such as the operating system, CD-burner, RAM, graphic card, HD, add-on cards, factory installed software and many, many more.

The approved computers are tested according to IEC 60945 and IACS E10 and meet the requirements for IEC 61174 (ECDIS). Several approvals by major classification societies such as ABS, BV, ClassNK, DNV, GL and LR are available or pending. The 19in rack computers can be operated up to 70°C.

Flexible display solutions and night vision facilities

All the type-approved displays, panel computers and marine computers offer maximum flexibility for customers' applications. Hatteland Display offers all products with AC or DC power supply, and marine displays and marine panel computers have a fully linear dimmable function for night vision.

Upon the customer's request, specific colour, mechanical or electrical function designs are possible. Many more options are also available, including factory mounted touch screens, sun visors for marine monitors, different Windows or Linux operating systems and brackets

Design and Production

All products are designed and controlled by Hatteland Display in Nedre Vats, Norway. The production and configuration of all products is taking place within Hattelands production plant#1 (opened in September 2003) in Nedre Vats, Norway. Here an extensive manufacturing capacity is available for all products, and can be expanded in the future.

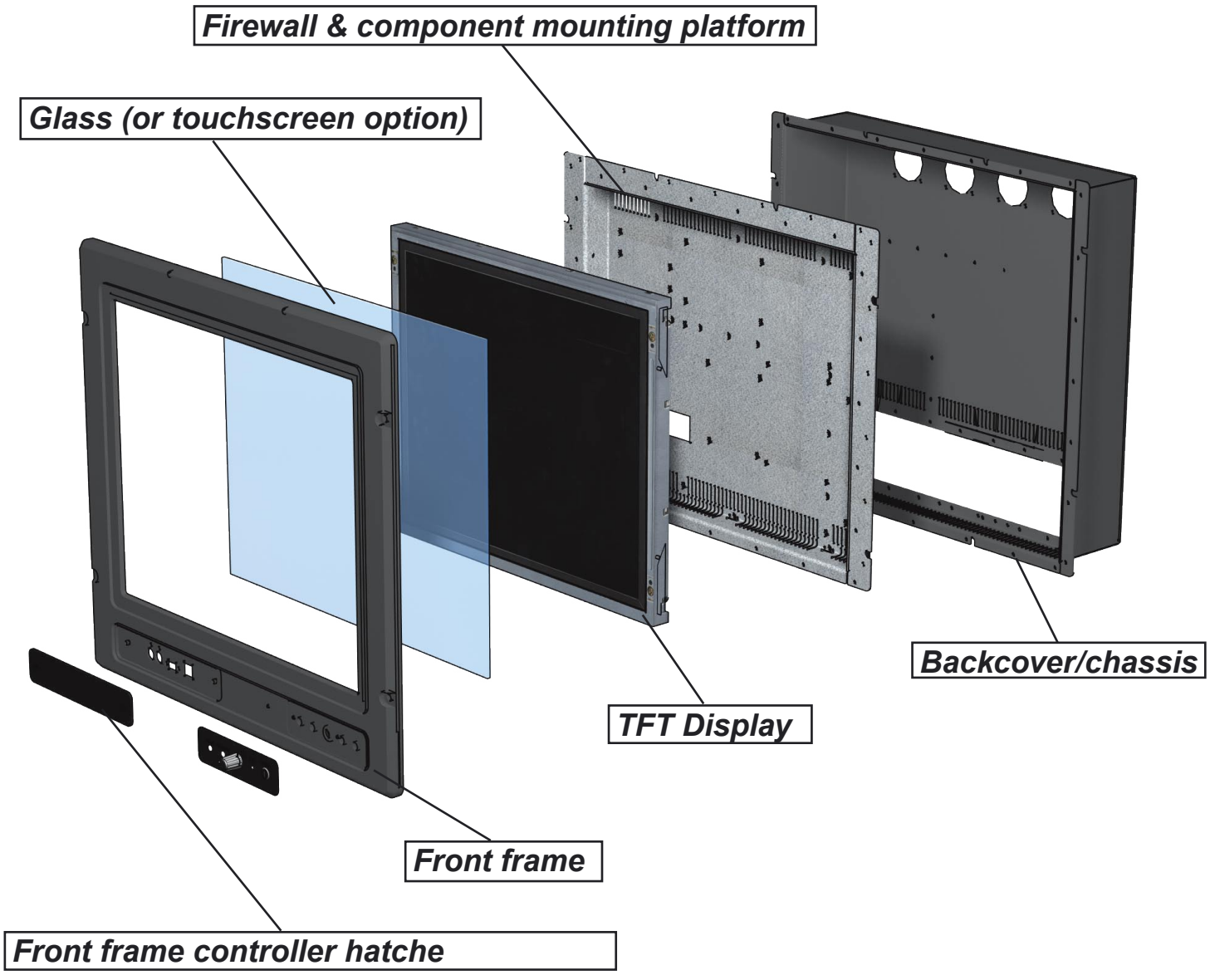
The chosen materials for the production of the products are specifically industrial components and can fulfill form-fit-and-function requests.

About this manual

The manual contains electrical, mechanical and input/output signal specifications. All specifications in this manual, due to manufacturing, new revisions and approvals, are subject to change without notice. However, the last update and revision of this manual are shown both on the frontpage and also in the "Revision History" chapter. Please use that as a reference.

Furthermore, for third party datasheet and user manuals, please see dedicated interactive CD delivered with the product or contact our sales personnel for support.

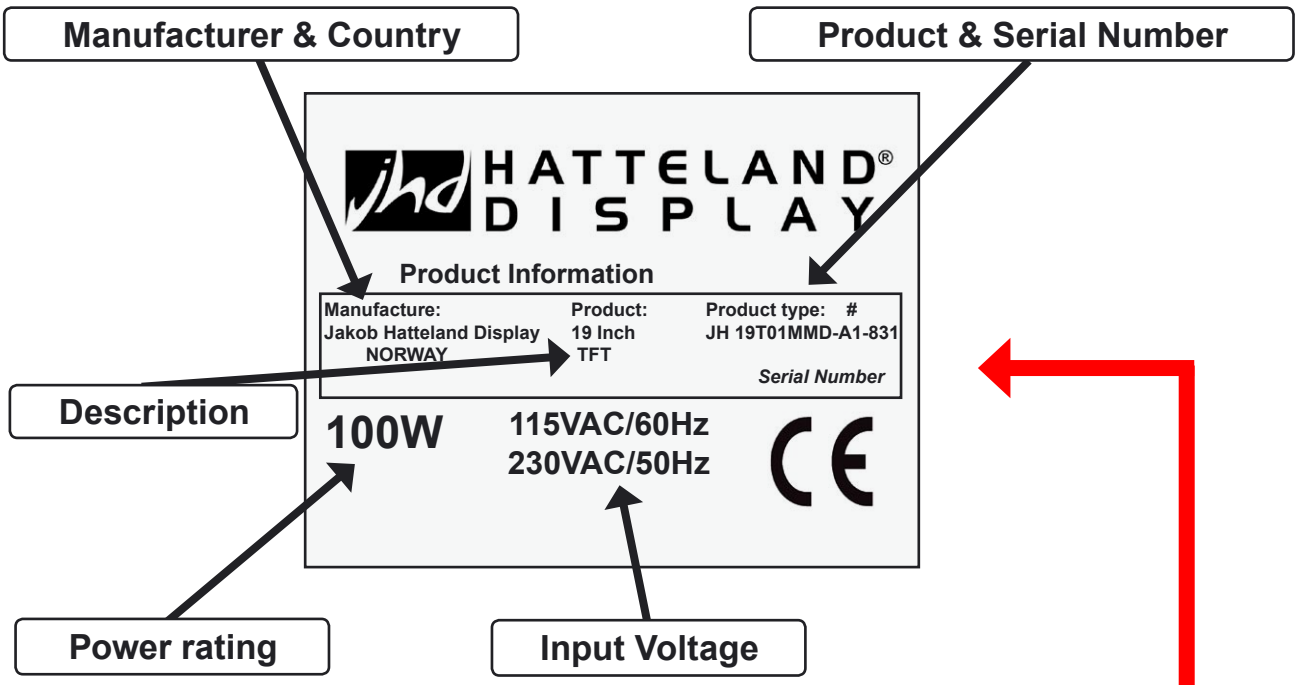
Basic Construction
Maritime Multi Computers



Illustration

Product Labels (Example)

Serial Number Label



Product Type and Serial Number

```
JH XXAXX AAA-AX-XXX  NOMENCLATURE
JH 19T01 MMD-A1-831  Example
                     Serial Number
                     Sub Version (AC-Odd / DC-Even number)
                     Version (Number & Product Name)
                     TFT (Thin Film Transistor)
                     Display Size (inch)
                     Jakob Hatteland (manufacturer)
```

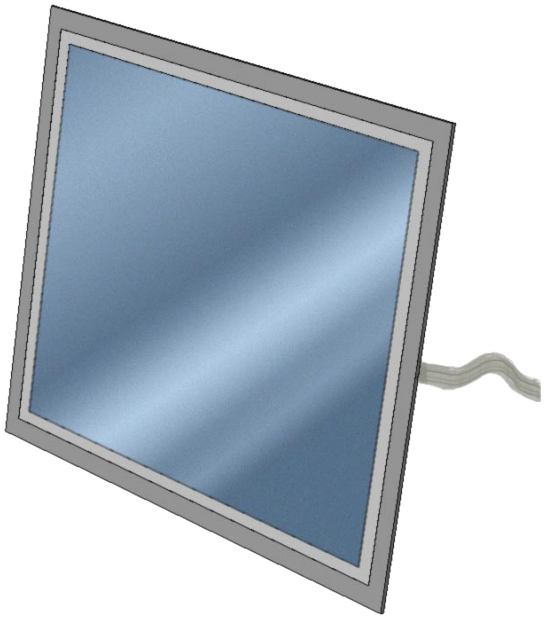
Warranty Label

If you are to perform service on a unit still under warranty, any warranty will be void if this label is damaged or removed. This label is usually located on the back of the product and near the serial number label. This is to help our service department to better determine if there has been any unauthorized service on a product still under warranty.

Capacitive Touchscreen

Introduction to Jakob Hatteland Display products with touchscreen
JHD uses both Resistive and Capacitive touchscreen solutions for their products. Please visit our website to verify what product and touchscreen solution your product have.

Capacitive Touchscreen
Capacitive touchscreens operate using oscillator circuits that are located in each corner of the glass overlay and measure the capacitance of the area to be “touched”. Depending on where the user touches the overlay, the oscillators will vary in frequency. A touchscreen controller then measures the frequency variations to ascertain the coordinates of the person’s touch. This glass overlay has a coating that stores the charge deposited over its surface electrically. It will not operate with either a gloved hand or with a mechanical stylus.



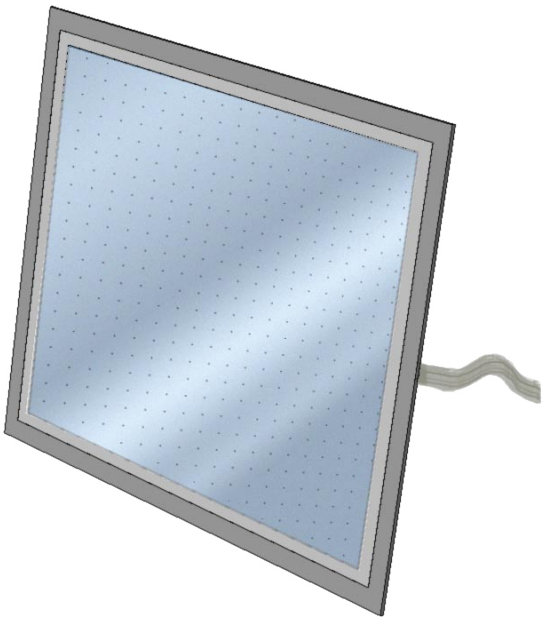
Brief Specifications

Subject	Details
Construction	**Top:** ClearTek protective overcoat protects the sensors and increase durability. **Inside:** Electrode X/Y grid pattern and conductive coating. **Bottom:** Glass and conductive coating. Small amount of voltage is applied to the four corners for measuring X and Y coordinates of the touch point.
Positional Accurancy	Reported touch coordinates are within 1.0% of true position. (Based on viewing area dimensions)
Touch Contact Requirements	3 ms for finger input.
Enduarance Tested	More than 225 million touches in one location without noticable degradation to the surface.
Cleaning	Water, isopropyl, alcohol, and similar non-abrasive cleaners.
Liquid Resistance	Liquids on screen does not impede touchscreen performance.
Light Transmission	Up to 88% at 550 nm; dependant on specific surface finish chosen.

Updated touchscreen drivers and documentation for your operating system:
Please visit our website www.hatteland.com for 3rd party software, drivers and complete documentation for touchscreens. In case of problems, please contact our sales department.

Resistive Touchscreen

Resistive Touchscreen
It generally uses a display overlay composed of layers, each with a conductive coating on the interior surface. Special separator “dots” are distributed evenly across the active area and separate the conductive interior layers.



The pressure from using either a mechanical stylus or finger produces an internal electrical contact at the “action point” which supplies the controller with vertical and horizontal analog voltages for data input. The resistive touchscreens are anti-glare to reduce reflective shine intensity, which will slightly diffuse the light output throughout the screen. Resistive technology activation can be initiated by; a gloved hand, fingernail, mechanical stylus or an ungloved finger.

Brief Specifications

Subject	Details
Construction	**Top:** Polyester with outside hard-surface coating with clear or anti-glare finish. **Inside:** Transparent conductive coating. **Bottom:** Glass substrate with uniform conductive coating. Top and bottom layers separated by separator dots.
Positional Accurancy	Standard deviation of error is less than +- 0.080-inch (2mm).
Touch Activation Force	Typically 57 to 133 g
Expected Life Performance	More than 35 million touches in one location without failure, using a stylus similar to a finger.
Chemical Resistance (Exposed for one hour)	Acetone, Ammonia-based glass cleaners, Common food and beverages, Hexane, Isopropyl alcohol, Methylene chloride, Methyl ethyl ketone, Mineral spirits, Turpentine
Light Transmission	Typically 75% over visible light spectrum.

Updated touchscreen drivers and documentation for your operating system:
Please visit our website www.hatteland.com for 3rd party software, drivers and complete documentation for touchscreens. In case of problems, please contact our sales department.

Installation Recommendations

Installation and mounting of computers

1. Most of our units are intended for various methods of installation or mounting (rack mounting, panel mounting, bracket mounting, ceiling/wall mounting)

2. Adequate ventilation is a necessary prerequisite for the life of the unit. The air inlet and outlet openings must definitely be kept clear; coverings which restrict ventilation are not permissible.

3. Exposure to direct sunlight can cause a considerable increase in the temperature of the unit, and might under certain circumstances lead to overtemperature. This point should already be taken into consideration when the bridge equipment is being planned (sun shades, distance from the windows, ventilation, etc.)

4. Space necessary for ventilation, for cable inlets, for the operating procedures and for maintenance, must be provided.

5. To further improve the cooling of the unit we recommend installing Cooling Fans underneath blowing upwards into the unit air inlet. This may be required in high temperature applications and also when there is reason to expect temperature problems due to non-optimal way of mounting (Ref.2-5).

General mounting instructions

- The useful life of the components of all Electronics Units generally decreases with increasing ambient temperature; it is therefore advisable to install such units in air-conditioned rooms. If there are no such facilities, these rooms must at least be dry, adequately ventilated and kept at a suitable temperature in order to prevent the formation of condensation inside the unit.

- With most Electronic Units, cooling takes place via the surface of the casing. The cooling must not be impaired by partial covering of the unit or by installation of the unit in a confined cabinet.

- In the area of the wheel house, the distance of each electronics unit from the magnetic standard compass or the magnetic steering compass must not be less than the permitted magnetic protection distance. This distance is measured from the centre of the magnetic system of the compass to the nearest point on the corresponding unit concerned.

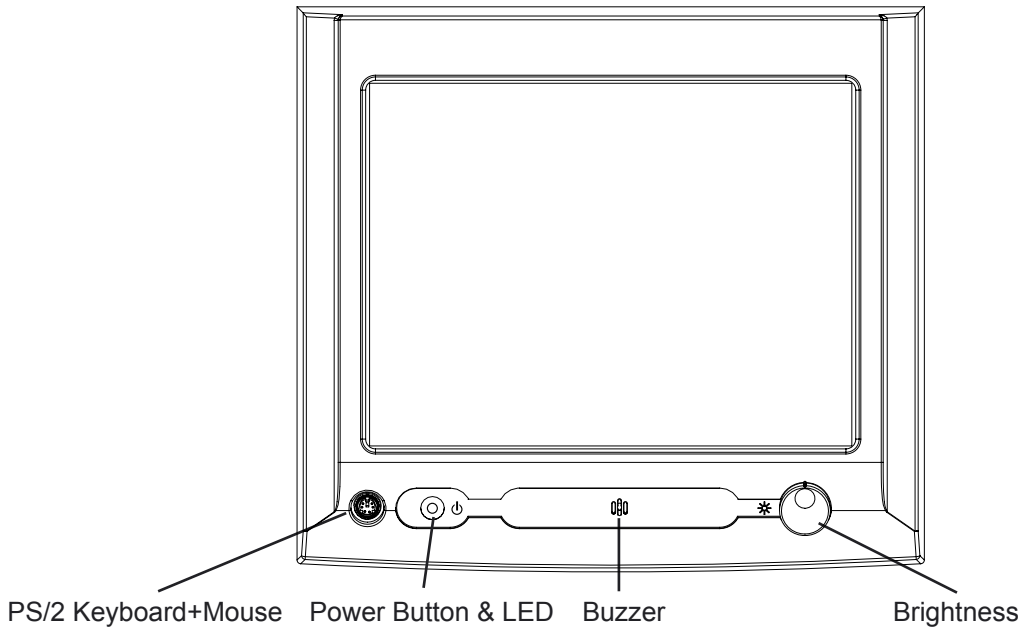
- Transportation damage, even if apparently insignificant at first glance, must immediately be examined and be reported to the freight carrier. The moment of setting-to-work of the equipment is too late, not only for reporting the damage but also for the supply of replacements.

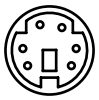
Cables

Use only high quality shielded signal cables. For RGB/DVI cables use only cables with separate coax for Red, Green and Blue. We can supply a varity of high quality RGB/DVI, RS232, PARALLEL, LAN and USB cables intended for this use.

Physical Overview - JH 12T01 MMC

Front area of computer





PS/2 Keyboard+Mouse INPUT: (Applies also for rear mounted PS/2)
Connect the PS/2 cable to the PS/2 5P Connector (female) on the front side of the panel computer. Three possible connections are available: Keyboard Only, Mouse Only (via designated PS/2 splitter), or combined Mouse & Keyboard (via designated PS/2 splitter)

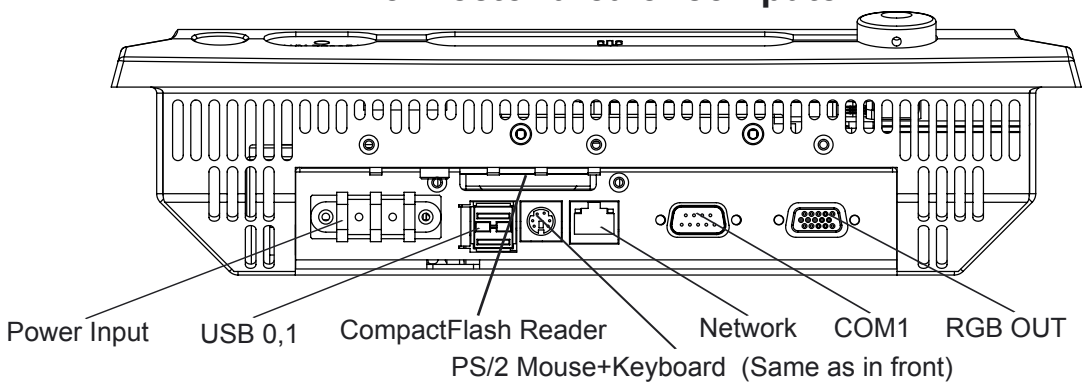
Power Button & LED:
To turn ON the computer, press down this button and release it immediately. The power indication (LED) will turn green. If the computer is in standby this LED will be red.
To turn OFF the computer, press down this button and hold it for 3 seconds.
- Note: The operating system may require additionally tasks to be performed before computer shuts down.

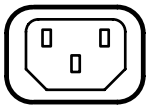
Buzzer:
Sound indication from the internal speaker. Will sound a beep upon alarms or notifications from the Operating System or other software that support System Speaker.

Brightness:
The product features a 100% dimmable image, which means it is capable of displaying a completely black image when the brightness knob is turned fully to the left.
- Note: If the display is delivered with Transflective Technology, the dimming may vary depending on environment. Transflective Technology uses environment / ambient lighting to preserve / enhance the brightness, meaning such products are very suitable for viewing in direct sunlight.

Physical Overview - JH 12T01 MMC

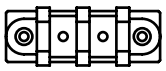
Connector area of computer

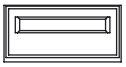




Power INPUT: (AC or DC Model)

AC MODEL ONLY: The internal AC power module supports both 115VAC/60Hz and 230/50Hz power input.
DC MODEL ONLY: Secure the cables (check polarity!) to the screw terminal. The internal DC power module supports voltage from 12 to 24 VDC.



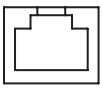


USB INPUT/OUTPUT:

Connect any USB 1.1 compliant peripherals into either of these two USB connectors. Drivers for most USB devices are useally included in operating system or on separate installation CD's delivered with product. USB 2.0 devices will operate in USB 1.1 mode (12 Mbps)

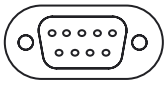
CompactFlash Reader:

CompactFlash Reader supports Type I & II cards. Insert the card gently into the slot with the logo facing towards the TFT display). The drive letter assigned within the operating system will be automatically unassigned when the card is removed from the slot. The card is removed by pulling the factory mounted sticker extension away from the slot. This card & sticker is factory installed upon customer request.



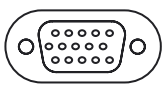
Network INPUT/OUTPUT:

Supports 10/100Mbps Ethernet. Suitable for twisted pair cables CAT.5E. Make sure the network cable connector "clicks" into the RJ-45 connector.



COM1 Serial Port INPUT/OUTPUT:

Supports RS232/RS422/RS485 using a D-SUB 9P Male connector. Fasten the cable to the connector using the provided screws on the cable housing itself.



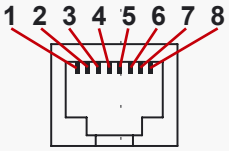
RGB OUTPUT:

Will output a clone signal from the computer for use with external display or monitor. Connects via a High Density D-SUB 15P Female connector. Fasten the cable to the connector using the provided screws on the cable housing itself.

Pin Assignments - Common Connectors

Note: Not all connectors may be available on your specific product. This depends on the amount of additional hardware installed from factory, or customized solutions. These pin assignments are for the common connectors used.

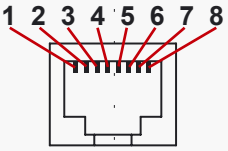
Pin Assignments - RJ45 10/100 LAN



Pin 01 - TDP	Transmit Differential Pair (Positive)
Pin 02 - TDN	Transmit Differential Pair (Negative)
Pin 03 - RDP	Receive Differential Pair (Positive)
Pin 04 - NC	Not Connected
Pin 05 - NC	Not Connected
Pin 06 - RDN	Receive Differential Pair (Negative)
Pin 07 - NC	Not Connected
Pin 08 - NC	Not Connected

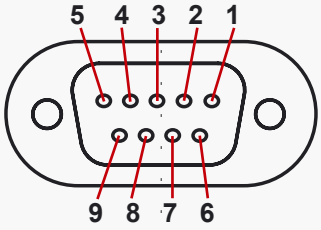
Use category 5 - twisted pair cable

Pin Assignments - RJ45 10/100/1000 GBLAN



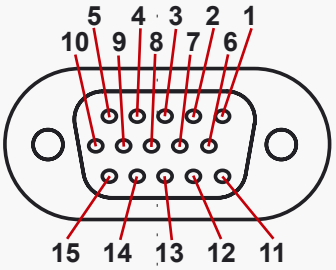
Pin 01 - D0P	Differential Pair 0 (Positive)
Pin 02 - D0N	Differential Pair 0 (Negative)
Pin 03 - D1P	Differential Pair 1 (Positive)
Pin 04 - D2P	Differential Pair 2 (Positive)
Pin 05 - D2N	Differential Pair 2 (Negative)
Pin 06 - D1N	Differential Pair 1 (Negative)
Pin 07 - D3P	Differential Pair 3 (Positive)
Pin 08 - D3N	Differential Pair 3 (Negative)

Pin Assignments - 9P Serial COM RS232



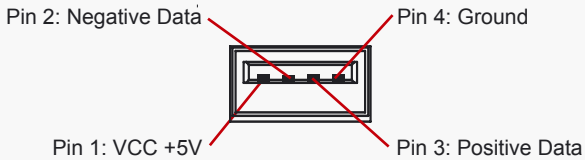
Pin 01 - DCD	Data Carry Detect
Pin 02 - SIN	Serial In or Receive Data
Pin 03 - SOUT	Serial Out or Transmit Data
Pin 04 - DTR	Data Terminal Ready
Pin 05 - GND	Ground
Pin 06 - DSR	Data Set Ready
Pin 07 - RTS	Request To Send
Pin 08 - CTS	Clear To Send
Pin 09 - RI	Ring Indicate

Pin Assignments - 15P HD RGB VGA

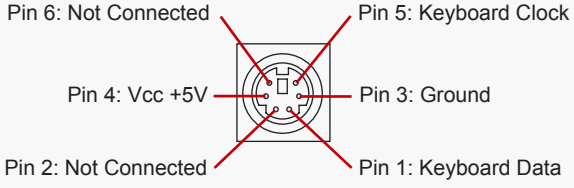


Pin 01	Red, analog
Pin 02	Green, analog
Pin 03	Blue, analog
Pin 04	Reserved for monitor ID bit 2 (grounded)
Pin 05	Digital ground
Pin 06	Analog ground red
Pin 07	Analog ground green
Pin 08	Analog ground blue
Pin 09	+5V power supply for DDC (optional)
Pin 10	Digital ground
Pin 11	Reserved for monitor ID bit 0 (grounded)
Pin 12	DDC serial data
Pin 13	Horizontal sync or composite sync, input
Pin 14	Vertical sync, input
Pin 15	DDC serial clock

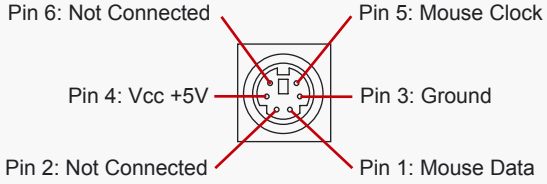
Pin Assignments - USB



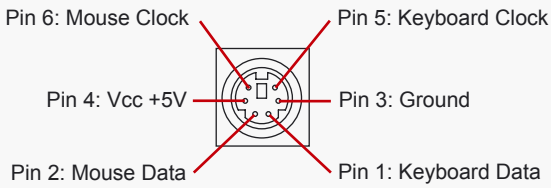
Pin Assignments - 5P PS/2 KEYBOARD



Pin Assignments - 5P PS/2 MOUSE

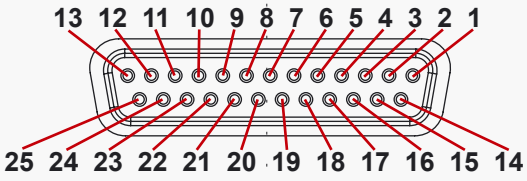


Pin Ass. - 5P PS/2 KEYBOARD+MOUSE Combined



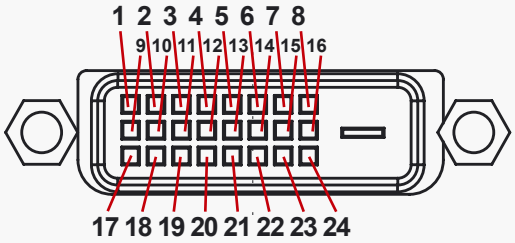
Pin Assignments - Common Connectors

Pin Assignments - 25P Parallel



Pin 01 - STROBE	This signal indicates to the printer that data at PD7..0 are valid.
Pin 02 - DATA0	Parallel data bus from PC board to printer. The data line are able to operate in PS/2 compatible bi-directional mode.
Pin 03 - DATA1	Same as Pin 02
Pin 04 - DATA2	Same as Pin 02
Pin 05 - DATA3	Same as Pin 02
Pin 06 - DATA4	Same as Pin 02
Pin 07 - DATA5	Same as Pin 02
Pin 08 - DATA6	Same as Pin 02
Pin 09 - DATA7	Same as Pin 02
Pin 10 - ACK	Signal from printer indicating that the printer has received the data and is ready to accept further data.
Pin 11 - BUSY	Signal from printer indicating that the printer cannot accept further data.
Pin 12 - PE	Signal from printer indicating that the printer is out of paper.
Pin 13 - SELECT	Signal from printer to indicate that the printer is selected.
Pin 14 - AUTO FEED	This active low output causes the printer to add a line feed after each line printed.
Pin 15 - ERR#	Signal from printer indicating that an error has been detected.
Pin 16 - INIT#	This active low output initialises (resets) the printer.
Pin 17 - SLIN#	Signal to select the printer sent from CPU board to printer.
Pin 18 - GND	Ground
Pin 19 - GND	Ground
Pin 20 - GND	Ground
Pin 21 - GND	Ground
Pin 22 - GND	Ground
Pin 23 - GND	Ground
Pin 24 - GND	Ground
Pin 25 - GND	Ground

Pin Assignments - 24P DVI-D



Pin 01	T.M.D.S. Data2 -
Pin 02	T.M.D.S. Data2 +
Pin 03	T.M.D.S. Data2/4 Shield
Pin 04	T.M.D.S. Data4 -
Pin 05	T.M.D.S. Data4 +
Pin 06	DDC Clock
Pin 07	DDC Data
Pin 08	Not Connected
Pin 09	T.M.D.S. Data1 -
Pin 10	T.M.D.S. Data1 +
Pin 11	T.M.D.S. Data1/3 Shield
Pin 12	T.M.D.S. Data3 -
Pin 13	T.M.D.S. Data3 +
Pin 14	+5V Power
Pin 15	Ground (for +5V)
Pin 16	Hot Plug Detect
Pin 17	T.M.D.S. Data0 -
Pin 18	T.M.D.S. Data0 +
Pin 19	T.M.D.S. Data0/5 Shield
Pin 20	T.M.D.S. Data5 -
Pin 21	T.M.D.S. Data5 +
Pin 22	T.M.D.S. Clock Shield
Pin 23	T.M.D.S. Clock +
Pin 24	T.M.D.S. Clock -

DDC = Display Data Channel
T.M.D.S = Transition Minimized Differential Signal

Specifications

Specifications - JH 12T01 MMC

Note: All specifications are subject to change without prior notice!

TECHNICAL DESCRIPTION

TFT Technology:

- 12.1 inch viewable image size
- Thin Film Transistor (TFT)
- a-Si TFT Active Matrix

TFT Characteristics:

• Pixel number	:	800 x 600
• Pixel pitch (RGB)	:	0.3075 (H) x 0.3075 (V) mm
• Response Time	:	25 ms (typical), "black" to "white"
• Contrast Ratio	:	600:1 (typ)
• Light Intensity	:	400 cd/m2 (typical)
• Active Display Area	:	246.0 (H) x 184.5 (V) mm
• Max Colors	:	262,144 colors
• Viewable Angles	:	Up: 45°, Down: 55°, Right: 70°, Left: 70°
• Resolutions	:	800 x 600

Computer Specifications:

• Processor	:	National Geode GX1 300Mhz with MMX
• Cache / PCI Clock	:	16KB Cache Level 1 / 33 MHz BUS
• System Chipset	:	National CS5530A
• BIOS	:	Phoenix + Kontron Technology
• Memory	:	1 x 128 MB (MAX 256MB) PC133 SDRAM
• Graphics Chipset	:	XPRESS Graphics National CS5530A with 4MB RAM
• IDE Controller	:	2 x IDE Ports, Ultra DMA33
• IDE HDD	:	Fujitsu Automotive 20 GB internal, 2.5" IDE, 5400 RPM
• Compact Flash	:	1 x CF Socket (Type I & II)
• Serial Port	:	1 x RS232/RS422/RS485 (NS16550 UART)
• Ethernet	:	1 x 10/100 Mbps (Realtek 8139C)
• USB	:	2 x USB (USB 1.1 compliant, 12 MBit) (USB Legacy not supported)
• Keyboard	:	1 x PS/2
• Mouse	:	1 x PS/2
• Speaker	:	Build in speaker
• Alarm	:	Build in Buzzer (controlled by parallel port)

Power Specifications:

Power Supply Options:

• 24 VDC : Model JH 12T01 MMC A4*

*Tested according to EN60945 and IACS E10

Power Consumption:

• Operating : 31W (Typ)

MECHANICAL DESCRIPTION

Physical Dimensions:

- 320 (W) 288 (H) 62 (D)
- Weight: 4.4kg

User Controls:

On front bezel:

- Power On/Off (push button with internal LED)
- Brightness Knob Wheel

Environmental Considerations:

• Operating	: Temperature -15 deg. C to +70 deg. C : (+70 deg. C non functional) Humidity 30% to 90% (non condensing)
• Storage	: Temperature -20 deg. C to +70 deg. C Humidity 10% to 90% (non condensing)

Safety Considerations:

Even although the test conditions for bridge units provide for a maximum operating temperature of 55°C, continuous operation of all electronic components should, if possible, take place at ambient temperatures of only 25°C. This is a necessary prerequisite for long life and low service costs.

Input/Output Connectors:

Function	Back side	Inside	Front
10/10 BaseT	1 x RJ-45		
Keyboard	1 x PS/2		
Mouse			1 x PS/2
COM 1	1 x DB9M		
COM 2		Reserved for touchscreen	
USB	2 x Std USB 1.1		
DC Power	DC Screw terminal		
RGB OUT	1 x HDDB15F		

Available Mechanical Options:

Accessories:

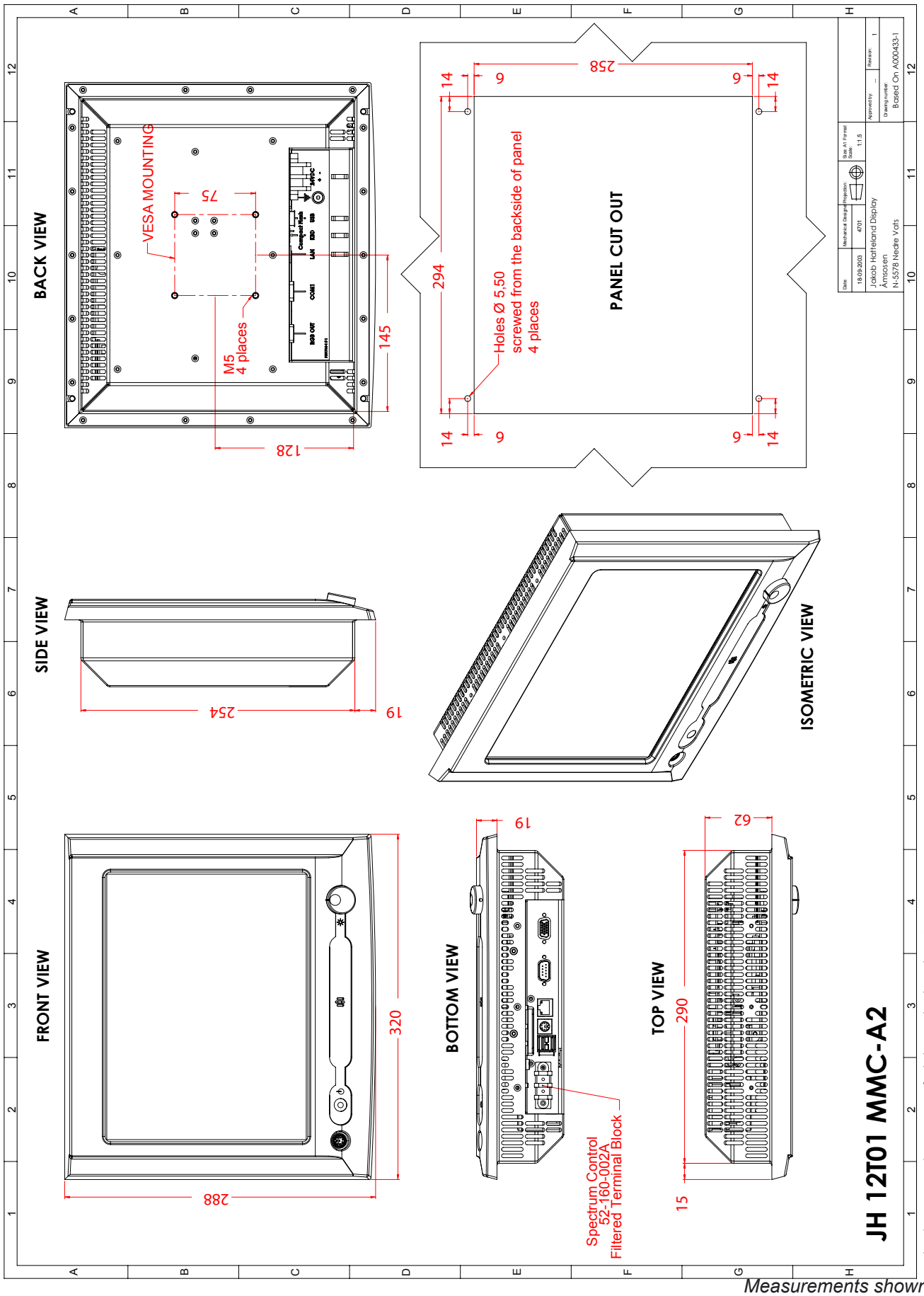
- Touch Screen **

* Option: Standard or custom logo and color
** Option: Factory mounted

www.hatteland.com

Technical Drawings

Technical Drawings - JH 12T01 MMC



Due to dimensions without decimals, the tolerance on drawings is +/- 1mm (For accurate measurements, measure in AutoCAD)
Technical drawings (.DWG format) are found on our internet site: http://www.hatteland.com

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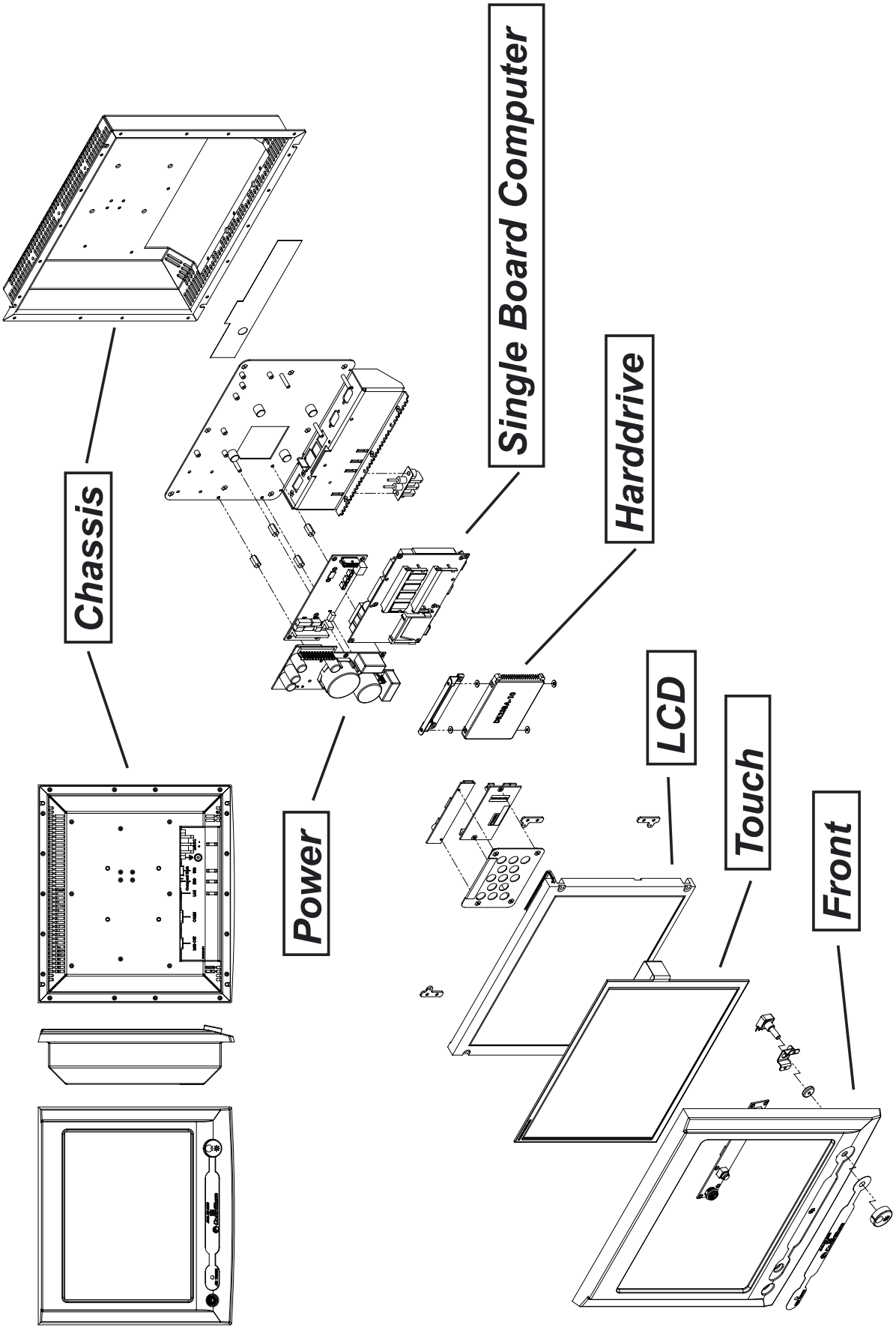
Measurements shown in cm

Exploded View - JH 12T01 MMC



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General - Appendix

Basic Trouble-shooting

COMMON ERRORS: (Applies for Display products and Panel / Maritime / Rack Computers)
If for some reason there should be something wrong with the picture quality or no picture present, check the symptoms carefully and try to cure it with the hints below:

NO PICTURE / LED BEHAVIOUR:
If there is no light at all in the LED at the FRONT, check power cables. If the LED in front is green then check if the brightness knob is turned to the right (max brightness). If still no picture, check if there is a VGA signal on the External VGA connector. If you have a picture on the external VGA connector please look in BIOS documentation/chapter for correct display settings in BIOS.
Lack of image is most likely to be caused by incorrect connection, lack of power, or wrong BIOS settings.

SCROLLING / UNSTABLE IMAGE:
Signal cable may not be completely connected to computer or TFT display.
Check the pin assignments and signal timings of the display and your video card with respect to recommended timing and pin assignments. Make sure that the video card is compatible and that it is properly seated / installed on the computer.

DISPLAY AREA IS NOT CENTERED / SIZED CORRECTLY
Make sure that a supported video mode has been selected on the display, or on the video card / system. If it is impossible to position the image correctly, ie the image adjustment controls will not move the image far enough, then test it again using another graphics card for the PC system. This situation can occur with a custom graphics card that is not close to standard timings or if something is in the graphics line that may be affecting the signal, such as a signal splitter (please note that normally a signal splitter will not have any adverse effect).
If it is impossible to change to the correct resolution/color depth, check if you have the right VGA driver installed in your system.

IMAGE APPEARANCE:
A faulty TFT panel can have black lines, pixel errors, failed sections, flickering or flashing image. Incorrect graphics card refresh rate, resolution or interlaced mode will probably cause the image to be the wrong size, it may scroll, flicker badly or possibly even no image is present. Sparkling on the display may be a faulty TFT panel signal cable.

CONTINUED FAILURE:
If unit after unit keeps failing, consider and investigate whether you are short circuiting the equipment or doing something else seriously wrong.

DEW CONDENSATION BEHIND GLASS:
Power on the TFT product and set brightness to 100%. Turn off any automatic screensavers on PC or similar. During minutes the dew will be gone. To speed up the process, use a fan heater for a reasonable time. Do not overheat the TFT product.

Testing & Approvals Overview

These products have been tested / type approved by the following classification societies:

Type Number	Tests	Certificated by
JH 10T06 STD Ax	**EN60529** (IP66) (Applies only for flush mounting)	
JH 10T06 MMD Ax	**EN60945 3rd** (IEC945 3rd) **EN60529** (IP66) (Applies only for flush mounting)	**ClassNK** - Nippon Kaiji Kyokai **DNV** - Det Norske Veritas **GL** - Germanischer Lloyd **BV** - Bureau Veritas
JH 15T05 STD Ax		
JH 15T05 MMD Ax		
JH 17T01 MMD Ax	**EN60945 3rd** (IEC945 3rd) **EN60529** (IP66) (Applies only for flush mounting)	**ClassNK** - Nippon Kaiji Kyokai **ABS** - American Bureau of Shipping **DNV** - Det Norske Veritas **LRS** - Lloyd's Register of Shipping **GL** - Germanischer Lloyd **BV** - Bureau Veritas
JH 19T02 MMD Ax	**EN60945 4th** (IEC945 4th)	
JH 20T03 MMD Ax	**EN60945 3rd** (IEC945 3rd) **EN60529** (IP66) (Applies only for flush mounting) **EN61174 (IEC1174)** - Bundesamt für Seeschiffahrt und Hydrographie (BSH)	**ClassNK** - Nippon Kaiji Kyokai **ABS** - American Bureau of Shipping **DNV** - Det Norske Veritas **LRS** - Lloyd's Register of Shipping **GL** - Germanischer Lloyd **BV** - Bureau Veritas
JH 20T05 MMD Ax		
JH 23T02 MMD Ax	**EN60945 3rd** (IEC945 3rd) **EN60529** (IP66) (Applies only for flush mounting) **EN61174 (IEC1174)** - Bundesamt für Seeschiffahrt und Hydrographie (BSH)	**ClassNK** - Nippon Kaiji Kyokai **ABS** - American Bureau of Shipping **DNV** - Det Norske Veritas **LRS** - Lloyd's Register of Shipping **GL** - Germanischer Lloyd **BV** - Bureau Veritas

Testing & Approvals Overview

These products have been tested / type approved by the following classification societies:

Type Number	Tests	Certificated by
JH 12T01 MMC A4	**EN60945 4th** (IEC945 4th) **IACS E10**	**DNV** - Det Norske Veritas **ClassNK** - Nippon Kaiji Kyokai **GL** - Germanischer Lloyd **BV** - Bureau Veritas
JH 15T05 MMC A1	**EN60945 4th** (IEC945 4th) **IACS E10**	**ClassNK** - Nippon Kaiji Kyokai **GL** - Germanischer Lloyd **DNV** - Det Norske Veritas
JH 19T02 MMC A1	**EN60945 4th** (IEC945 4th) **IACS E10**	**ClassNK** - Nippon Kaiji Kyokai **GL** - Germanischer Lloyd **DNV** - Det Norske Veritas
JH 23T02 MMC A1	**EN60945 4th** (IEC945 4th) (Pending) **IACS E10** (Pending)	

HATTELAND® DISPLAY

Declaration of Conformity

We, manufacturer

Jakob Hatteland Display A/S
Åmsosen, N-5578 Nedre Vats, Norway

declare under our sole responsibility that the
MMD, MMC, STD and MIL products
is in conformity with the following standards
in accordance with the EMC Directive

EN 55022 Class A - Emission
EN 55024 - Immunity

Signature:.....
Frode Grindheim
Technical Director
Jakob Hatteland Display A/S

Signature:.....
Arne Kristiansen
Development Engineer
Jakob Hatteland Technology A/S

Date: 08 September 2004

CE

Return Of Goods Information

Return of goods: (Applies not to warrenty/normal service/repair of products)
Before returning goods, please contact your system supplier before sending anything directly to JHD. When you return products after loan, test, evaulation or products subject for credit, you must ensure that all accessories received from our warehouse is returned to JHD.
This applies to cables, powermodules and additional equipment except screws or similar, user manual, datasheets or other written paper documents. Furthermore, the product must not have any minor / medium or severe scratches, chemical spills or similar on the backcover, front frame or glass.

This is needed to credit the invoice 100%. Missing parts will not be subject for credit, and you will not get total credit for returned product. You will either be charged separately or the amount is withdrawn from the credit. If you noticed that our product missed accessories upon receival, we are of course open for further investigation and positive solutions. If you decide to ship the missing items on the after hand, you will get 100% credit for that particular invoice or items received at JHD incoming goods control. Please contact our sales personnel if additional questions.

Current prices apply as per May 2004:

Signal Cable DSUB 15P Male or Female - Approx 1,8meters	Price: 170,- NOK each
Signal Cable BNC 5P - Approx 1,8meters	Price: 350,- NOK each
RS-232 serial cable DSUB 9P - Approx 1,8meters	Price: 80,- NOK each
Powercable 110 / 220 VAC (European or US standard) - Approx 1,8meters	Price: 50,- NOK each
Minor / Medium or severe scratches / chemical spill on backcover	Price: 1300,- NOK
Any scratch, chemical spill or similar on front frame (including glass)	Price: 2000,- NOK

(Prices are approx, and any deviation are evaulated during incoming goods control)

Approved packaging methods/materials: (Applies to all shipments to JHD)
When returning goods, please make sure you surround the product with the following material, whenever possible: Original packaging from JHD, firm foam material, bubble wrap or lots of PadPack paper or Foam chips/polyester wrapped in sealed plastic bags. In any case, always use a solid cardboard box to surround everything.

Not approved packaging methods/materials are: Foam chips, expanded polyester, clothes, nothing, or too little, or anything that will crumble and get into the ventilation holes of products and cardboard boxes that are not suitable to secure the product during shipment.

Terms

The Hatteland Group - Terms Of Sale And Delivery:

1) APPLICATION
The terms of sale and delivery include the following companies: Autostore AS, Jakob Hatteland Assembly AS, Jakob Hatteland Computer AS, Jakob Hatteland Display AS, Jakob Hatteland Logistics, Jakob Hatteland Supply AS and Jakob Hatteland Technology AS.

2) PRICE
a) The price is per each, if nothing else has been stated, VAT not included. Price is based on the prices from our suppliers, current custom rates, taxes, rate of exchange and international raw material prices. We reserve ourselves the rights to adjustments in case of alternation on the above mentioned.
b) Included in the price is the supplier's standard packing. In case of re-packing/smaller quantities we reserve ourselves the right to add an additional sum for warrantable packing according to CECC 0015 (Basic inspection for protection of electrostatic sensitive devices)

3) VALIDITY
If nothing else has been stated in our quotation, the offer is valid for 30 days from the date of quotation.

4) PACKAGE QUOTATION
A package quotation means that all the components offered, must be ordered by us. If one component or more are removed from the quotation, the prices given in the package quotation are not valid.

5) TERMS OF PAYMENT
Cash on delivery or payment in advance. Net granted for companies, schools and institutions only, according to agreement. In case of too late payment 1.5% interest/month will be charged. Seller has mortage rights in the goods delivered until the purchase price, additional interests and charges have been paid in full. Accepted bill is not considered as payment until it has been honoured in full.

6) TIME OF DELIVERY
The quoted time of delivery is based on information from our suppliers. We disclaim any responsibility for the consequences of any delay or cancellation from our suppliers. Belated delivery gives not solely the right for cancellation.

7) DELIVERY POINT OF TIME
Goods are considered delivered to customer when handed over to charterer.

8) FREIGHT / PACKING / FORWARDING FEE
Jakob Hatteland Display AS charge NOK 50 in forwarding fee for orders below NOK 1.000. For orders below NOK 1.000 Jakob Hatteland Supply AS charge freight according to expenses, and NOK 25 for packing. For handling requested beyond ordinary hours NOK 250 is charged. Express service is charged with NOK 100 + freight charges. All the companies charge freight according to expenses for orders above NOK 1.000. VAT not included.

9) COMPLAINT
By receipt customer must check goods for obvious defects which have to be claimed within 8 days from receipt. Otherwise acceptance of complaint can not be counted on.

10) GUARANTEE / SERVICES
Time of guarantee is calculated from our date of shipment, and applies to the extent that we are covered by our supplier's guarantee regulations. The guarantee does no longer apply if:

I) there has been encroached upon the goods without seller's consent
II) terms of payment is not fulfilled
III) the goods have been damaged due to unskilled treatment
IV) components which are sensitive for static electricity have not been unpacked and treated in a secure way. Minimum requirements: CECC 00015's standards for handling of such components. The guarantee does not include fair wear and tear.

Terms

11) RESPONSIBLITY
Seller undertake to deliver faultless and functional capable goods according to existing technical specifications. Seller disclaim responsibility for any damage or loss which directly or indirectly may be caused due to failure or defect with the delivered goods, if carelessness from the seller can be limited up to the cost of the goods. The supplier's responsibility for defects with the supplied goods do not include secondary damage or loss.

12) CANCELLATION / RETURN
Binding sales contract is concluded when we have confirmed customer's purchase order. Any disagreements in our order confirmation must be reported to seller within 6 days. The agreement can not be altered without our permission, after acceptance from our supplier. If goods are wanted to be returned, a Return No must be assigned from seller. Returned goods without a Return No will not be accepted. By return of stock listed goods, 20% return fee is charged. Returned goods are shipped on customer's account and risk.

13) LOAN, RENT and DEMO
When borrowing of goods for demo/test, the date of return must be added to the document. If no date has been stated, date of return is two weeks from the date of the document. Before return, seller must be contacted for a Return No (RTK). Goods which have been sold with an agreed right of return within stated terms, shall also have a Return No. The Return No must be obtained before the stated date of return. Returned goods without a Return No, or which have not been packed in original packing, will not be accepted.

14) LIMITATIONS
If any of our suppliers claim limited delivery terms towards us, our terms of delivery will be restriced according to those.

15) SOFTWARE
Sold or borrowed software is not allowed to be copied or spread in other ways, without a written permission.

16) RE-EXPORT
Goods delivered from seller may be subject to special rules of exportation in their supplier's native country. Buyer is responsible to obtain necessary permissions for further export/re-sale.

17) QUESTION IN DISPUTE
To settle any dispute the Karmsund Herredsrett is approved the legal venue.

Terms

INSTRUCTIONS FOR THE CONSIGNEE

1) CONTROL

Control the goods immediately by receipt. Examine the quantity towards the invoice/packinglist/shipping documents. Look for outward defects on the packing which may indicate damage on or loss of contents. Control the container and the seals for any defects.

2) SECURING EVIDENCE

When defects on the goods have been found, evidence must be secured, and seller must be informed. Call the transporter and point out the defects. Add a description of the defects on the goods receipt, the forwarder's copy of the way-bill or on the driving slip.

3) RESCUE

Bound the damage. Try to restrict the damage and the loss. Seller will compensate expences incurred due to reasonable security efforts in addition to damage and loss.

4) COMPLAINT

Write immediately a complaint to the transporter or his agent. Forward immediately the complaint to the transporter or his agent, and hold the transporter responsible for the defects. The complaint must be sent at the latest:

- for carriage by sea: within 3 days
- for overland / air transportation within 7 days

5) DOCUMENTATION

For any claims the following documentation is required, and must be forwared to the company or their agent:
invoice, way-bill and/or bill of landing, and/or statement of arrival, inspection document, besides a copy of the letter of complaint to the transporter.

Notes

General Notes: (For all products)

- The unit is type approved according to EN60945 4th, 4.4, equipment category b) protected from the weather.

- Other type approvals applies for the different products.
  Please see **Testing & Approvals Overview** section in this manual for more information.

- Use of brightness and push buttons may inhibit visibility of information at night.

Note for ECDIS Systems

For ECDIS systems the brightness knob indication mark should be aligned directly with the indication mark located on the label. (See Physical Overview or Operation section in this manual)

Note for Documentation CD-ROM

The separate and full documentation for third party components (including options that are factory installed) are available on attached CD. The printed physical manual only covers specific information for Hatteland products, and not generally includes third party components.

Revision History

Rev.	By	Date	Notes
1	SE	28 May 04	First release.
2	SE	03 Sep 04	General update.
3	SE	10 Feb 05	Updated Testing & Type Approval section.
4	SE	17 Mar 05	Updated Testing & Type Approval section.

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www.hatteland.com

Thank you for choosing our quality products !